

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Withdrawn) A semiconductor nanocrystal, where the nanocrystal is surface-coordinated with a compound containing a photosensitive functional group.

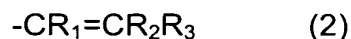
2. (Withdrawn) The semiconductor nanocrystal according to claim 1, wherein the compound containing a photosensitive functional group is represented by Formula 1 below:



wherein X is NC-, HOOC-, HRN-, POOOH-, RS- or RSS- (in which R is a hydrogen atom or a C₁₋₁₀ saturated or unsaturated aliphatic hydrocarbon group); A is a direct bond, an aliphatic organic group, a phenylene group or a biphenylene group; and B is an organic group containing at least one carbon-carbon double bond, which may be substituted with at least one group selected from the group consisting of -CN, -COOH, halogen groups, C₁₋₅ halogenated alkyl groups, amine groups, C₆₋₁₅ aromatic hydrocarbon groups, and C₆₋₁₂ aromatic hydrocarbon groups substituted with F, Cl, Br, a halogenated alkyl group, R'O- (in which R' is a hydrogen atom or a C₁₋₅ alkyl group), -COOH, an amine group or -NO₂.

3. (Withdrawn) The semiconductor nanocrystal according to claim 2, wherein the aliphatic organic group in the moiety A of Formula 1 is a saturated aliphatic hydrocarbon group, an aliphatic ester group, an aliphatic amide group, an aliphatic oxycarbonyl group or an aliphatic ether group.

4. (Withdrawn) The semiconductor nanocrystal according to claim 2, wherein the moiety B in Formula 1 is an organic group represented by Formula 2 below:



wherein R_1 is a hydrogen atom, $-\text{COOH}$, a halogen group, a C_{1-5} alkyl group or a halogenated alkyl group; and R_2 and R_3 are each independently a hydrogen atom, a C_{1-30} alkyl group, $-\text{CN}$, $-\text{COOH}$, a halogen group, a C_{1-5} halogenated alkyl group, a C_{2-30} unsaturated aliphatic hydrocarbon group containing at least one carbon-carbon double bond, a C_{6-12} aromatic hydrocarbon group substituted or unsubstituted with F, Cl, Br, hydroxyl, a C_{1-5} halogenated alkyl group, an amine group, $\text{R}'\text{O}-$, in which R' is a C_{1-5} alkyl group, $-\text{COOH}$ or $-\text{NO}_2$.

5. (Withdrawn) The semiconductor nanocrystal according to claim 2, wherein the photosensitive compound is selected from a group consisting of acrylic acid compounds, unsaturated fatty acid compounds, cinnamic acid compounds, vinylbenzoic acid compounds, acrylonitrile-based compounds, unsaturated nitrile-based compounds, unsaturated amine compounds and unsaturated sulfide compounds.

6. (Withdrawn) The semiconductor nanocrystal according to claim 2, wherein the photosensitive compound is selected from a group consisting of methacrylic acid, crotonic acid, vinylacetic acid, tiglic acid, 3,3-dimethylacrylic acid, trans-2-pentenoic acid, 4-pentenoic acid, trans-2-methyl-2-pentenoic acid, 2,2-dimethyl-4-pentenoic acid, trans-2-hexenoic acid, trans-3-hexenoic acid, 2-ethyl-2-hexenoic acid, 6-heptenoic acid, 2-octenoic acid, citronellic acid, undecylenic acid, myristoleic acid, palmitoleic acid, oleic acid, elaidic acid, cis-11-elcosenoic acid, euric acid, nervonic acid, trans-2,4-pentadienoic acid, 2,4-hexadienoic acid, 2,6-heptadienoic acid, geranic acid, linoleic acid, 11,14-eicosadienoic acid, cis-8,11,14-eicosatrienoic acid, arachidonic acid, cis-5,8,11,14,17-eicosapentaenoic acid, cis-4,7,10,13,16,19-docosahexaenoic acid, fumaric acid, maleic acid, itaconic acid, ciraconic acid, mesaconic acid, trans-glutaconic acid, trans-beta-hydromuconic acid, trans-traumatic acid, trans-muconic acid, cis-aconitic acid, trans-aconitic acid, cis-3-chloroacrylic acid, trans-3-chloroacrylic acid, 2-bromoacrylic acid, 2-(trifluoromethyl)acrylic acid, trans-styrylacetic acid, trans-cinnamic acid, α -methylcinnamic acid, 2-methylcinnamic acid, 2-fluorocinnamic acid, 2-(trifluoromethyl)cinnamic acid, 2-chlorocinnamic acid, 2-methoxycinnamic acid, 2-hydroxycinnamic acid, 2-nitrocinnamic acid, 2-carboxycinnamic acid, trans-3-fluorocinnamic acid, 3-(trifluoromethyl)cinnamic acid, 3-chlorocinnamic acid, 3-bromocinnamic acid, 3-methoxycinnamic acid, 3-hydroxycinnamic acid, 3-nitrocinnamic acid, 4-methylcinnamic acid, 4-fluorocinnamic acid, trans-4-(trifluoromethyl)-cinnamic acid, 4-chlorocinnamic acid, 4-bromocinnamic acid, 4-methoxycinnamic acid, 4-hydroxycinnamic acid, 4-nitrocinnamic acid, 3,3-dimethoxycinnamic acid, 4-vinylbenzoic acid, allyl methyl sulfide, allyl disulfide, diallyl

amine, oleylamine, 3-amino-1-propanol vinyl ether, 4-chlorocinnamionitrile, 4-methoxycinnamionitrile, 3,4-dimethoxycinnamionitrile, 4-dimethylaminocinnamionitrile, acrylonitrile, allyl cyanide, crotononitrile, methacrylonitrile, cis-2-pentenitrile, trans-3-pentenitrile, 3,7-dimethyl-2,6-octadienenitrile and 1,4-dicyano-2-butene.

7. (Withdrawn) The semiconductor nanocrystal according to claim 1, wherein the semiconductor nanocrystal comprises CdS, CdSe, CdTe, ZnS, ZnSe, ZnTe, HgS, HgSe, HgTe, GaN, GaP, GaAs, InP, InAs or a mixture thereof.

8. (Withdrawn) The semiconductor nanocrystal according to claim 7, wherein the semiconductor nanocrystal comprises at least two compounds selected from the group consisting of CdS, CdSe, CdTe, ZnS, ZnSe, ZnTe, HgS, HgSe, HgTe, GaN, GaP, GaAs, InP and InAs, and is a uniformly mixed type, gradiently mixed type, core-shell type or ally type.

9. (Withdrawn) A photosensitive composition for a semiconductor nanocrystal pattern, the composition comprising i) semiconductor nanocrystals, and ii) a photocurable compound.

10. (Withdrawn) The photosensitive composition according to claim 9, wherein the semiconductor nanocrystals are semiconductor nanocrystals surface-coordinated with a compound represented by Formula 1 below:



wherein X is NC-, HOOC-, HRN-, POOOH-, RS- or RSS-, in which R is a hydrogen atom or a C₁₋₁₀ saturated or unsaturated aliphatic hydrocarbon group; A is a direct bond, an aliphatic organic group, a phenylene group or a biphenylene group; and B is an organic group containing at least one carbon-carbon double bond, which may be substituted with at least one group selected from the group consisting of -CN, -COOH, halogen groups, C₁₋₅ halogenated alkyl groups, amine groups, C₆₋₁₅ aromatic hydrocarbon groups, and C₆₋₁₂ aromatic hydrocarbon groups substituted with F, Cl, Br, a halogenated alkyl group, R'O-, in which R' is a hydrogen atom or a C₁₋₅ alkyl group, -COOH, an amine group or -NO₂.

11. (Withdrawn) The photosensitive composition according to claim 9, wherein the photocurable compound is selected from a group consisting of polymers containing acryl and/or vinyl group and ether-based compounds.

12. (Withdrawn) The photosensitive composition according to claim 9, wherein the photocurable compound is selected from a group consisting of multifunctional acrylate-based compounds, multifunctional polyalkyleneoxide compounds and a polysiloxanes containing at least one acryl and/or vinyl group.

13. (Withdrawn) The photosensitive composition according to claim 12, wherein the photocurable compound is selected from a group consisting of allyloxyated cyclohexyl diacrylate, bis(acryloxy ethyl)hydroxyl isocyanurate, bis(acryloxy neopentylglycol) adipate, bisphenol A diacrylate, bisphenyl A dimethacrylate, 1,4-butanediol diacrylate, 1,4-butanediol dimethacrylate, 1,3-

butyleneglycol diacrylate, 1,3-butyleneglycol dimethacrylate, dicyclopentanyl diacrylate, diethyleneglycol diacrylate, diethyleneglycol dimethacrylate, dipentaerythriol hexaacrylate, dipentaerythriol monohydroxy pentacrylate, ditrimethylolprpane tetraacrylate, ethyleneglycol dimethacrylate, glycerol methacrylate, 1,6-hexanediol diacrylate, neopentylglycol dimethacrylate, neopentylglycol hydroxypivalate diacrylate, pentaerythritol triacrylate, pentaerythritol tetraacrylate, phosphoric acid dimethacrylate, polyethyleneglycol diacrylate, polypropyleneglycol diacrylate, tetraethyleneglycol diacrylate, tetrabromobisphenol A diacrylate, triethyleneglycol divinylether, triglycerol diacrylate, trimethylolpropane triacrylate, tripropyleneglycol diacrylate, tris(acryloxyethyl)isocyanurate, phosphoric acid triacrylate, phosphoric acid diacrylate, acrylic acid propargyl ester, vinyl terminated polydimethylsiloxane, vinyl terminated diphenylsiloxane-dimethylsiloxane copolymer, vinyl terminated polyphenylmethysiloxane, vinyl terminated trifluoromethylsiloxane-dimethylsiloxane copolymer, vinyl terminated diethylsiloxane-dimethylsiloxane copolymer, vinylmethysiloxane, monomethacryloyloxypropyl terminated polydimethyl siloxane, monovinyl terminated polydimethyl siloxane and monoallyl-mono trimethylsiloxyl terminated polyethylene oxide.

14. (Withdrawn) The photosensitive composition according to claim 9, wherein the semiconductor nanocrystals comprise CdS, CdSe, CdTe, ZnS, ZnSe, ZnTe, HgS, HgSe, HgTe, GaN, GaP, GaAs, InP, InAs or a mixture thereof.

15. (Withdrawn) The photosensitive composition according to claim 9, wherein the semiconductor nanocrystals comprise at least two compounds selected from the group consisting of CdS, CdSe, CdTe, ZnS, ZnSe, ZnTe, HgS, HgSe, HgTe, GaN, GaP, GaAs, InP and InAs, and is a uniformly mixed type, gradiently mixed type, core-shell type or ally type.

16. (Currently Amended) A method for forming a semiconductor nanocrystal pattern on a substrate, comprising the steps of : i) ~~producing a semiconductor nanocrystal film using the semiconductor nanocrystals according to claim 1 or the photosensitive composition according to claim 9;~~ ii) (a) coating a substrate with a dispersion in an organic solvent of semiconductor nanocrystals selected from the group consisting of CdTe, ZnS, ZnSe, ZnTe, HgS, HgSe, HgTe, GaN, GaP, GaAs, InP, InAs, and mixtures thereof, wherein said semiconductor nanocrystals are surface-coordinated with a compound containing a photosensitive functional group or are in admixture with a photocurable compound; (b) evaporating said organic solvent to form a nanoparticle film on said substrate of said semiconductor nanocrystals in combination with said surface-coordinated compound containing a photosensitive group or said photocurable compound; (c) exposing the film to light through a mask; and-iii) (d) developing the exposed film.

17. (Currently Amended) The method according to claim 16, wherein the nanoparticle film of step ~~[[i]]~~ (b) is dried at 30-100°C before the light exposure of step ~~[[ii]]~~ (c).

18. (Currently Amended) The method according to claim 16, wherein the nanoparticle film of step ~~[[i]]~~ (b) is produced by dispersing the semiconductor nanocrystals ~~according to claim 1 or the photosensitive composition according to claim 9 in an organic solvent~~, and coating the dispersion in step (a) onto a substrate by spin coating, dip coating, spray ~~coating~~ coating, or blade coating.

19. (Currently Amended) The method according to claim 18, wherein the organic solvent of step (a) further comprises a photoinitiator selected from a group consisting of acetophenone-, benzoin-, benzophenone- and thioxantone-based photoinitiators.

20. (Currently Amended) The method according to claim 16, wherein the light exposure of step (c) is carried out at an exposure dose of 50~850 mJ/cm² through a photomask having a predetermined pattern.

21. (Currently Amended) The method according to claim 16, wherein the light exposure of step (c) is carried out using a light source having a wavelength range of ~~200-500nm~~ 200-500 nm and an energy range of ~~100-800W~~ 100-800 W.

22. (Currently Amended) The method according to claim 16, wherein the development of step ~~[[iii]]~~ (d) is carried out using an organic solvent, a weakly acidic or basic solution, or water.

23. (Withdrawn) An organic-inorganic hybrid electroluminescent device, wherein the semiconductor nanocrystal pattern prepared according to the method of claim 16 is contained as a luminescent layer.